

REMARKS

This Amendment is prepared in response to the non-final Office Action (Paper No. 20100218) mailed on 3 March 2010. Reexamination and reconsideration are respectfully requested.

Listing of The Claims

Pursuant to 37 CFR §121(c), the claim listing, including the text of the claims, will serve to replace all prior versions of the claims, in the application.

Status of The Claims

Claims 1 through 10 are pending in this application.

Amendment of The Claims

Claims 2 and 3 are amended in this Paper.

Issues Raised by Paper No. 20100218

Claim Rejections - 35 U.S.C. § 112

I. Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner rejected claims 1 and 2 under 35 U.S.C. 112 by mistakenly asserting that:

“The limitation of ‘for increasing vapor pressure’ is indefinite because it raises the question of how as a vapor pressure increased without the presence of any liquid?”

The Examiner seemed to exclude the liquid from the pending claims 1 and 2.

The Applicant submits that, even though claims 1 and 2 do not expressly define any liquid, claims 1 and 2 do not exclude such liquid phase material. There is nothing wrong with the original claims 1 and 2 which only recite the “vapor pressure” generated by the heat exchanger without excluding the presence of such liquid phase of a material.

Therefore, the Examiner’s rejection should be withdrawn.

Therefore, the Applicant submits that the Examiner should interpret the definition of “a heat exchanger ... for increasing vapor pressure to apply a force to the valve piston to be pushed upward such that the gas control valve automatically adjusts the quantity of gas in response to the heat transferred to the heat exchanger” as defined, i.e., that a heat exchanger increases vapor pressure to apply a force to the valve piston to be pushed upward such that the gas control valve automatically adjusts the quantity of gas in response to the heat transferred to the heat exchanger.

II. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 is amended and such amendment is fully supported by the original paragraph [0069] and FIG. 7.

Claim Rejections - 35 U.S.C. § 103(a)

I. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wasson (US 2784913).

Claim 1

The Examiner rejected claim 1 by stating that:

“With respect to claim 1, Wasson discloses a gas control valve comprising: a hollow valve case (1) including a gas intake port (6) formed at the upper side thereof, a gas discharge port (32) formed at the side thereof [see FIG 1]; a valve piston (35) with which an O-ring for sealing the space between the valve case and the valve piston is coupled [col 3, line 43-46]; a compression spring (33) inserted into the space between the valve piston and the protruded intermediate side to apply a force to push the valve piston; and a heat exchanger (36), installed on the bottom of the valve case, for increasing vapor pressure to apply a force to the valve piston to be pushed upward such that the gas control valve automatically adjusts the quantity of gas in response to the heat transferred to the heat exchanger [col 3, line 66-75, col 4, line 1-34]. Wasson does not disclose an upper inclined end having a narrow upper side and a wide lower side, and a protruded intermediate side or a valve piston that is inserted into the valve

case to move upward and downward or the force pushing down. These features are believed to be a matter of design choice since no advantage is given. Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a valve arranged as claimed because it would be within their knowledge of the possible designs to facilitate a working valve, showing a matter of design rather than criticality.”

The Applicant disagrees with the Examiner’s rejection because **(1)** Wasson ‘913 fails to disclose the Applicant’s “O-ring;” and **(2)** the Applicant’s “upper inclined end having a narrow upper side and a wide lower side, and a protruded intermediate side” are not simply a matter of design but are a matter of criticality of precisely control the flow and quantity of the supplied gas. Moreover, and most importantly, from all of the hundreds of thousands of possible “design choices” available to this Applicant and to others who are also skilled in the art, the Applicant’s selection of this particular “design choice” is a difference that must be patentable weight under the explicit mandate of 35 U.S.C. 103(a).

First, Wasson ‘913 fails to disclose “O-ring” which has a functionary of sealing and fails to disclose “a compression spring inserted into the space between the valve piston and the protruded intermediate side.”

The Applicant’s “O-ring” has a functionary of sealing the space between the valve case and valve piston (the Applicant’s paragraph [0008]). Conversely, Wasson ‘913 nowhere teaches or suggests a presence of such “O-ring.”

Therefore, Wasson ‘913 does not achieve a sealing functionality as good as the Applicant’s valve.

Second, the Examiner mistakenly asserted that the shape of the Applicant’s valve case is merely a matter of design rather than criticality.

The Applicant submits that in the original paragraph [0040], the criticality of the shape of the valve case is expressly disclosed as follows:

“As described above, when the valve piston 10d continuously ascends, the space, where the gas introduced through

the gas intake port 10b flows, is gradually narrowed, the quantity of the discharged gas is decreased. When the temperature of the device serving as a heat source is decreased due to the decreased quantity of the supplied gas, the force due to the vapor pressure is less than the force of the compression spring 10e and the valve piston 10d descends. As a result, the quantity of the supplied gas is increased again such that the quantity of the supplied gas is automatically adjusted according to the temperature of the device serving as a heat source.”

Consequently, the Applicant’s “upper inclined end having a narrow upper side and a wide lower side, and a protruded intermediate side” precisely control the flow and quantity of the supplied gas during the up-and-down movement of the valve piston 10d.

The Examiner should understand that such criticality may be only found in the Applicant’s application, for example, the original paragraph [0040].

Wasson ‘913’s failure of providing a valve case having “upper inclined end having a narrow upper side and a wide lower side, and a protruded intermediate side” results a failure of precisely control the flow and quantity of the supplied gas.

Consequently, claim 1 is not rendered obvious over Wasson ‘913.

Claim 2

The Examiner rejected claim 2 by stating that:

“With respect to claim 2, Wasson discloses a gas blocking valve comprising: a hollow valve case (1) including a gas discharge port (32) formed at the side thereof, a gas intake port (6) a valve piston (35), inserted into the valve case, with which an O-ring for sealing the space between the valve case and the valve piston is coupled [col 3, line 43-46]; a compression spring (33) inserted into the space between the valve piston and the protruded intermediate side to apply a force to push the valve piston down; and a heat exchanger (36), installed on the bottom of the valve case, for increasing vapor pressure to apply a force to the valve piston to be pushed upward such that the gas blocking valve automatically blocks gas in response to the heat transferred to the heat exchanger [col 3, line 66-75. col 4, line 1-34], however does not disclose the intake formed below the gas discharge port, and a

protruded intermediate side or a piston to move upward and downward. These features are believed to be a matter of design choice since no advantage is given. Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a valve arranged as claimed because it would be within their knowledge of the possible designs to facilitate a working valve, showing a matter of design rather than criticality.”

The Applicant disagrees with the Examiner’s rejection because Wasson ‘913 fails to disclose the Applicant’s “O-ring.” The Applicant’s “O-ring” has a functionality of sealing the space between the valve case and valve piston (the Applicant’s paragraph [0008]). Conversely, Wasson ‘913 nowhere teaches or suggests a presence of such “O-ring.” Therefore, Wasson ‘913 does not achieve a sealing functionality as good as the Applicant’s valve.

The Applicant however amends claim 2 as follows in order to more accurately define the structure of the valve:

“2. (Currently Amended) A gas blocking valve, comprising:
a hollow valve case including a gas discharge port formed at the side thereof, a gas intake port formed below the gas discharge port, and a protruded intermediate side;
a valve piston disposed in immediate contact with a space including a liquid, inserted into the valve case to move upward and downward, with which an O-ring for sealing the space between the valve case and the valve piston is coupled, and with the space disposed above a heat exchanger;
a compression spring inserted into the space between the valve piston and the protruded intermediate side to apply a force to push the valve piston down; and
[[a]] the heat exchanger, installed on the bottom of the valve case, for increasing vapor pressure of a vapor transformed from the liquid within the space to apply a force to the valve piston to be pushed upward such that the gas blocking valve automatically blocks gas in response to the heat transferred to the heat exchanger.”

Wasson ‘913 fails to disclose that the valve stem 35 is disposed in **immediate** contact with a space including a liquid, with the space being disposed above a heat exchanger.

The Applicant's valve piston is directly pushed by the expanding vapor transformed from the liquid within the space; in comparison with Wasson '913, the Applicant's valve piston significantly simplifies the structure of the valve by eliminating the intermediate connections between the space and the valve piston.

Consequently, the amended claim 1 is not rendered obvious over Wasson '913.

II. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iritani (US 5839655), further in view of Wasson (US 2784913).

The Examiner rejected claim 3 by stating that:

“With respect to claim 3, Iritani discloses an automatic warm water circulator using gas valves, comprising: a circulation cycle formed such that a reservoir (1) is connected to a boiler (6) by a supply pipe, the boiler is connected to a heat exchanger (2) by a discharge pipe, and the reservoir is connected to the heat exchanger by a circulation pipe (3, 4) [see FIG 1]; a hollow combustion chamber (7) provided in the lower side of the boiler and having both sides protruded toward the outside of the boiler [see USC 112, 2nd above regarding claim 3]; however does not disclose the gas supply or the valves as claimed. The ignition device for burning the gas to heat the water in the boiler is an inherently present element since a combustion chamber is provided and ignition devices are notoriously known to be paired with any combustion device. Wasson teaches a similar device a gas supply for supplying the gas to the inside of the combustion chamber; and a supply valve and a discharge valve respectively provided in the supply pipe and the discharge pipe and automatically opened and closed in response to the inner pressure of the boiler [see FIG 1, col 3, line 66-75. col 4, line 1-34]. In view of Wasson, there is a gas supply device and valves as claimed. It would have been obvious to a person of ordinary skill in the art at the time of the invention to control the gas via the valves regarding the inner pressure of the boiler because the technique was known in the art, yielding the predictable result of providing a temperature of the water to be supplied that does not exceed unsafe levels.”

The Examiner's rejection is improper because (1) Iritani '655 fails to disclose the Applicant's “rcservoir” being “connected to a boiler by a supply pipe” in which a supply valve

and a discharge valve are disposed; **(2)** Iritani '655's burner 7 does not extrude from the boiler 1 towards the exterior of the boiler 1; and **(3)** Wasson '913 fails to disclose the Applicant's supply valve controlling the supply pipe.

First, Iritani '655's tank 6 is one of components of the boiler 1 and is disposed within the boiler 1. There is no supply pipe controlled by valves between Iritani '655's tank 6 and the boiler 1. In other words, the liquid flow is not controlled between Iritani '655's tank 6 and the boiler 1.

Conversely, the Applicant's "reservoir is connected to a boiler by a supply pipe" with such supply pipe being controlled by a supply valve. That is, the Applicant's reservoir is a separate unit in comparison with the boiler, and the liquid flow may be well controlled between the Applicant's reservoir and the boiler.

Second, as amended in claim 3, the Applicant's "hollow combustion chamber provided in the lower side of the boiler" and has "both sides protruded from the boiler toward ~~the outside~~ an exterior of the boiler." The Examiner should understand that such extruded hollow combustion is important for the hollow combustion to couple to air intake ports.

Conversely, Iritani '655's burner 7 is disposed wholly within the boiler 1 and may not be coupled to any air intake port.

Third, the Examiner mistakenly asserted that Wasson '915 discloses the Applicant's supply valve provided in the supply pipe and the discharge valve provided in the discharge pipe. The Applicant submits that Wasson '915 merely teaches a discharge pipe which controls the outlet 32; however, Wasson '915 nowhere suggests a supply valve controlling the inlet 6.

Therefore, Wasson '913 fails to disclose the Applicant's supply valve controlling the supply pipe.

Consequently, claim 3 is not rendered obvious over the Examiner's proposed combination.

III. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iritani (US 5839655), in view of Wasson (US 2784913), further in view of Sebastiani (US 5937796).

IV. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iritani (US 5839655), in view of Wasson (US 2784913), further in view of Kirk (US 2695753).

The Applicant notices that claim 3 is not rendered obvious over the Examiner's proposed combination. Consequently, claims 4-10 are not rendered obvious over the Examiner's proposed combination.

In view of the foregoing amendments and remarks, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. If there are any questions, the examiner is asked to contact the applicant's attorney.

A fee of \$555.00 (Small Entity) is incurred by filing a petition for three-month extension of time. The fee is being submitted online. Should there be a deficiency in payment, or should other fees be incurred, the Commissioner is authorized to charge Deposit Account No. 02-4943 of Applicant's undersigned attorney in the amount of such fees.

Respectfully submitted,

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